

**STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE**

RE: Application of Antrim Wind, LLC for Certificate of site and)
facility to construct up to 28.8 MW of wind electric generation in)
the town of Antrim, Hillsborough County, New Hampshire and)
operate the same (SEC Docket 2015-02).)

**MOTION REQUIRING PORTIONS OF THE ANTRIM WIND LLC APPLICATION BE BROUGHT
INTO COMPLIANCE WITH NH SITE EVALUATION COMMITTEE RULES**

NOW COMES the Wind Action Group by and through its undersigned representative, and Lorraine Carey Block, and Richard Block (the “Parties”), all intervenors in the above reference matter, who respectfully move the New Hampshire Site Evaluation Committee (“Committee” or “SEC”) to require portions of the Antrim Wind, LLC Application for a Certificate of Site and Facility (“Application”) be brought into compliance with the Committee’s recently amended rules. The deficiencies in the Application must be addressed as soon as possible in order to avoid undue delay in this proceeding. In support of this Motion, the Parties offer the following evidence.

1. On October 2, 2015, Antrim Wind, LLC (“Applicant” or “AWE”) filed an Application with the Committee for approval to construct and operate 9 Siemens SWT-3.2-113 wind turbines, each rated at 3.2 MW for a total nameplate capacity of 28.8 MW. A substation and other associated infrastructure are also described (“Project”). The Project is proposed to be located in the Town of Antrim on the Tuttle Hill ridgeline spanning southwestward to the northeastern slope of Willard Mountain (“Site”).

2. On October 20, 2015, the Chairman of the Committee appointed a Subcommittee in this Docket. (RSA 162-H:4-a) On November 18, 2015, the Subcommittee reviewed the Application and

determined that it contained sufficient information for the Subcommittee to carry out the purposes of RSA 162-H. An Order accepting the Application was issued on December 1, 2015.

3. Effective December 16, 2015, the SEC completed a lengthy process to update its rules by readopting with amendments the NH CODE OF ADMIN. RULES Site 100, Site 200, and Site 300.

4. The Committee issued a request to the Applicant on December 28, 2015, to review the amended rules and notify the SEC whether any additional information was required for the Application to comply with the rules. AWE responded in a December 29, 2015 letter wherein it asserted supplemental information would be forthcoming on or around February 19, 2016. Updated files were electronically distributed to the parties on February 19, 2016.

6. The Parties have reviewed the supplemental information in AWE's application and have identified at least four areas where the application fails to comply with the SEC rules. The areas of concern relate to decommissioning, visual simulations, noise, and shadow flicker.

APPLICATION IS NOT COMPLIANT WITH SITE 301.08(a)(7) AND 301.08(a)(8)f:

Decommissioning

7. Pursuant to SEC Site Rules 301.08(a)(7) and 301.08(a)(8)f, each application shall include a decommissioning plan with cost estimate that provides *inter alia* the removal of "all underground infrastructure at depths less than four feet below grade." AWE's application only provides for the removal of underground components to a depth of two feet (24 inches). (*Application at Appendix 21*)

8. AWE's response acknowledges the deficiency in the Application and asserts it "will agree to an amendment to its proposed decommissioning plan found in Appendix 21 to require

removal of all underground infrastructure to a depth of four feet where practicable.” (*Cover Letter to Supplement to Application at 5*)

9. AWE’s agreement to amend Appendix 21 at some future date does not bring the Application into compliance. Further, AWE’s casual use of the phrase “where practicable” is not supported by the rule. While an applicant may request a waiver from Site 301.08(8)(a)f, the plain language is clear that no such flexibility is allowed. If AWE needed additional time to bring Appendix 21 into compliance, the appropriate action would have been to file a motion for an enlargement in the schedule.

APPLICATION IS NOT COMPLIANT WITH SITE 301.05(8):

Visual Simulations

10. Pursuant to SEC Rule 301.05(a), each application shall include a visual impact assessment “prepared in a manner consistent with generally accepted professional standards by a professional trained or having experience in visual impact assessment procedures.”

11. AWE retained David Raphael and LandWorks to prepare a Visual Assessment of the proposed Project. This Visual Assessment, with accompanying photosimulations, was submitted on April 27, 2015. To comply with the SEC’s amended rules, AWE updated certain photosimulations from this Visual Assessment and submitted the updates with its February 19, 2016 filing.

12. The updated photosimulations included in the supplemental information (*Attachments 4 and 5*) only partially comply with the stipulated rules as detailed below.

- a. NH Site 301.05(8)(a) states that “Photographs used in the simulation shall be taken... under clear weather conditions and at a time of day that provides optimal clarity and contrast, and

shall avoid if feasible showing any utility poles, fences, walls, trees, shrubs, foliage, and other foreground objects and obstructions.”

- b. The original photosimulations were constructed on base photographs which were mostly taken on very hazy days, on July 1st and 2nd, 2014 and on August 21st, 2014 (*see Attachment 05 - Exhibit 06; Attachment 05 - Exhibit 07; Attachment 05 - Exhibit 10; and Attachment 05 - Exhibit 11*). Since the resubmitted photosimulations were revised only as far as the correction of the final printed resolution (*Cover Letter to Supplement to Application at 3*) there was no attempt to correct this noncompliance with the revised rules.
- c. Five of the photosimulations make no attempt to avoid foreground obstructions and distractions, including all three new photographs taken on February 12th, 2016 (*Attachment 4, Private Property Winter Visual Simulations*) Attachment 04 - Exhibit 24 has branches and a vertical fence post in the foreground. Attachment 04 - Exhibit 25 includes stone walls, trees, fences, and a vertical sculpture in the foreground. Attachment 04 - Exhibit 26 has a number of branches and a vertical tree in the immediate foreground. Attachment 05 - Exhibit 08 has a sailboat with a large vertical mast in the foreground almost in front of one of the turbines. Attachment 05 - Exhibit 11 has the entire foreground filled with trees and foliage. In all of these photographs, the foreground distractions could have been easily avoided by moving the camera location only slightly.
- d. NH Site 301.05(8)(d) states that “Field conditions in which a viewpoint is photographed shall be recorded including:... 4. Date, time, and weather conditions at the time the photograph is taken”. The times of the photographs for the newly submitted private property simulations (*Attachment 04 – Exhibits 24, 25, and 26*) are recorded as 2:30am, 12:46am, and 1:23am respectively. Since these are daylight pictures, this is obviously in

error. Attachment 05 – Exhibit 08, the photograph from the north shore of Gregg Lake, records the distance to the nearest visible turbine as “N/A” and the distance to the furthest visible turbine as “8.27 miles (13.30 km)”. It is plain from the accompanying View Location Map that this is in error. Given that these data figures are inaccurate and apparently were not checked by anyone at LandWorks or AWE, the veracity of all of the recorded data for this set of photographs is suspect.

- e. NH Site 301.05(8)(e.3) states that “Turbine blades shall be set at random angles with some turbines showing a blade in the 12 o’clock position”. Not one of the originally submitted photosimulations contains a turbine in the 12 o’clock position with the possible exception of Attachment 05 – Exhibit 8 where the turbine that is almost obscured by the sailboat mast is near, but not quite at the 12 o’clock position.
- f. NH Site 301.05(8)(e.1) states that “Turbines shall be placed with full frontal views and no haze or fog effect applied”. In nearly all photosimulations prepared by LandWorks, some haze effect is evident, in the form of a reduced contrast tonal range in the simulated turbines, even when the simulated turbines are not located at great distance from the viewer. Minimized contrast levels (variation between shadow and highlight areas) mimics the result of aerial perspective, where greater distance from the viewer on a hazy day results in a grayed out appearance of distant objects (the farther an object is from the viewer, the lighter gray it will appear). In several of the photosimulations the reduced contrast and therefore hazy appearance is extreme. Attachment 04 – Exhibits 24 and 26 and Attachment 05 – Exhibits 11 and 12 have simulated turbines placed on the photographs with low contrast levels which do not match the contrast levels of the adjacent landscape. Attachment 05 – Exhibit 06 is particularly noticeable since the low contrast level of the turbines is uniformly

applied, whether the turbines are located on the near hill or the more distant ridge.

Similarly, a fog effect may be achieved by blurring an object to simulate a hazy or foggy situation. In most of LandWorks' photographs where the met tower is included, it has been blurred.

- g. Again, NH Site 301.05(8)(e.1) prohibits the application of a haze or fog effect. The net result of this effect is an apparent reduction of the visual presence of the project. This, combined with the non-compliant base photographs taken on hazy days with numerous foreground distractions, presents the project in a least visible situation rather than a most visible state as required by the SEC revised rules. The erroneous data attached to the exhibit photographs only further compounds their non-compliance.

APPLICATION NOT COMPLIANT WITH NH SITE 301.18(a), (b), (c):

Noise

13. NH Site 301.08(a)(1) requires an Applicant prepare a "preconstruction sound background study and sound modeling study" in accordance with professional standards. SEC Site 301.18(a)(1) and 301.18(a)(2) each reference the names and dates of the specific professional standards to be followed. These are ANSI/ASA S12.9-2013 Part 3 and ANSI S12.9-1992 Part 2 (R2013) respectively.¹ NH Site 301.18 (c)(1) includes, by reference, the ISO 9613-2 1996-12-15 standard to be used when conducting predictive sound modeling.

¹ ANSI/ASA S12.9-2013 Part 3 is followed for short-term observed surveys where an observer is present. ANSI S12.9-1992 Part 2 (R2013) is followed for long-term unobserved surveys.

14. Adherence to these professional acoustical standards is a requirement of the SEC rules *and* also a mandate established under NH statute RSA 162-H:10-a II (4). In citing the standards by name and date, the Committee provides certainty for what is needed in order to comply with the rules. Such certainty is important in ensuring all parties, including acoustics experts working on behalf of the Applicant, are using best practice methods and accepted measurement protocols.

15. Robert O’Neal, of Epsilon Associates, Inc., was retained² by the Applicant to update the pre-construction background noise survey and prediction model for the Project in accordance with the Committee’s amended rules. (*Attachment 9 and Attachment 10*)

Background Sound Survey

16. Mr. O’Neal’s report confirms an unattended background survey was conducted during the period from January 7 to January 22, 2016. (*Attachment 9 at 5-1 and Attachment 10*) Since the sound survey was unattended,³ the methodology should have conformed to ANSI S12.9-1992 Part 2 (R2013). However, the methodology described in the report is not compliant with either of the ANSI standards for long-term unobserved or short-term observed measurements of background sound levels referenced in the rules. Below is a list of the obvious deficiencies in the study method.

- a. Mr. O’Neal is well aware that the purpose of a background sound survey under the NH rules is to establish the continuous background sound level (L₋₉₀) at locations where people would have an expectation of quiet, such as their backyards, and that will be impacted by sounds from the Project after construction. The L₋₉₀ measurement represents the noise level

² Mr. O’Neal was also retained by AWE in the prior Docket 2012-01.

³ Microphones were present at five locations during the period from January 7 to January 22, 2016.

remaining after all transient⁴ and uniquely identifiable sounds are removed. These transient background sounds, which Mr. O’Neal’s report generally describes as “traffic”, “diesel powered equipment”, “dogs barking”, “birds chirping”, “water noise”, “wind noise⁵”, “rustling vegetation” and “guns shooting,” were *not* removed from the measured data as required by the ANSI standard S12.9 Part 3 for determining background sound levels. Instead, all are mentioned as being included in the report’s graphs and charts. There is no information in the report regarding the location or direction of the sounds, the time when the sounds occurred, their duration or the distance relative to the measuring equipment. Such descriptive information should have been included with the report as required by the ANSI standards. Further, the report ignores NH Site 301.18(b)(4) and Site 301.18(b)(5) which require the *location* of significant local sounds and vibrations be cited in the report as well as the *distance* between all sound measurement points and these local sound sources.

- b. Mr. O’Neal does not provide the methodology used in selecting the five sound measurement points as required under ANSI S12.9-1992 Part 2. He only offers that the locations were “representative of nearby residences in various directions from the wind farm within a 2-mile radius of any wind turbine.” (*Attachment 9 at 5-1*) This description is also not compliant with NH Site 301.18(a)(3) which states measurements “shall be conducted at the nearest properties from the proposed wind turbines that are representative

⁴ Transient background sounds can be caused by birds, barking dogs, children playing, a car/truck pass-by, aircraft flyover or the operation of industrial equipment.

⁵ The standards require wind-induced pseudo sound produced by airflow over the microphone be avoided. Mr. O’Neal claims he used a windscreen as mandated under NH Site 301.18 (4) (b), but provides no specifications or even a photograph of the monitored setup. At the very least, this pseudo sound should have been clearly identified by Mr. O’Neal and removed from the data per the standards.

of all residential properties within 2 miles of any turbine.” In most cases, the selected locations do not represent the quiet locations of a home’s backyard. Instead, Mr. O’Neal used sites where people would expect to hear more noise, for example by the road, adjacent to driveways, or in the woods where the sound of rustling vegetation is pronounced⁶. The ANSI S12.9 Part 3 standard uses an example of a proper site being in a backyard, not in the woods or near other major noise sources.

- c. NH Site 301.18(b)(1), requires the report include the “layout of the project area, including topography, project boundary lines, and property lines.” Mr. O’Neal’s report includes the project layout, boundary lines and topography but excludes all other property lines.
- d. NH Site 301.18(b)(8) requires that the report identify the measured “A-weighted and C-weighted sound levels for L-10, Leq, and L-90.” Mr. O’Neal includes this information but also speciously includes unneeded, extraneous figures as *maximum*, *median*, and *average* figures without comment or explanation thus opening them up for confusing the lay reader as to their significance. This extraneous material appears to be included to dilute the impact of the low sound levels measured in Antrim for periods when transient and local sounds are not present i.e. the minimum L90, Leq and L10 values.

Predictive Sound Modeling

17. The prediction sound modeling conducted by Mr. O’Neal also failed to comply with the rules as detailed below.

⁶ By Mr. O’Neal’s own description, at least one of the monitored locations (L3) is situated in the woods, a condition that is not permitted under the ANSI standards.

- a. NH Site 301.18(c)(4) requires the study disclose all other corrections for model algorithm error accounted for in the model. Mr. O’Neal only considers the limited meteorological conditions specified in the ISO 9613-2 standard (Clause 5 of ISO 9613-2 i.e. calm or only a mild downwind condition). He never addresses the conditions of winds at 2 m/s and higher which could cause wind turbine noise to be higher and yet not masked by wind related noise. He also omits the +/- 3 dB correction (Clause 9 of ISO 9613-2).
- b. NH Site 301.18 (c)(3) requires predictions be made at *all* properties within 2 miles of the turbines. Mr. O’Neal’s supplemental materials omits at least 5 properties that he otherwise included in his October 2015 report. See Table 1 There is no explanation for why these properties were removed. At least three of these properties were modeled to show noise levels above the worse-case cited in Mr. O’Neal’s report, including location #24 with a predicted noise level at 40 dBA. We note that the SEC rules do not distinguish between participating and non-participating landowners.

Table 1

ID	Structure	Name	Address
21	House	OTT MICHAEL JAMES HUTCHINS	354 KEENE road
24	Hunting-Camp	COUTURIER MARCEL J	344 KEENE road
80	Hunting-cabin	MICHELI LYLE J & ANNE J	SALMON BROOK road
94	Camp	WHITTEMORE ETAL ARTHUR F	103 CAMP ROAD - PVT RD 38
95	Camp	WHITTEMORE ETAL ARTHUR F	103 CAMP ROAD - PVT RD 38

- c. A separate model for predicted sound emissions from the substation was omitted from the 2016 report. The substation, which is a separate component of the project, has very different acoustic characteristics as compared to other aspects of the Project. Given the likelihood of pure tone sound emissions, the substation may be subject to noise penalties

required in Site 301.18(h).⁷ Mr. O’Neal failed to include the substation which could be the closest noise source to any home.

APPLICATION IS NOT COMPLIANT WITH NH SITE 301.08(a)(2):

Shadow Flicker

18. Pursuant to SEC Rule 301.08(a)(2), each application shall include a shadow flicker assessment “that identifies the astronomical maximum as well as the anticipated hours per year of shadow flicker expected to be perceived at each residence, learning space, workplace, health care setting, outdoor or indoor public gathering area, other occupied building, and roadway, within a minimum of 1 mile of any turbine, based on shadow flicker modeling that assumes an impact distance of at least 1 mile from each of the turbines.”

19. SEC Rule 301.14(f)(2)b limits shadow flicker to no more than 8 hours per year “at or within any residence, learning space, workplace, health care setting, outdoor or indoor public gathering area, or other occupied building.”

20. Robert O’Neal, of Epsilon Associates, Inc., was retained by the Applicant to update the shadow flicker assessment in accordance with the amended rules. Mr. O’Neal was assisted by Richard M. Lampeter, a Senior Consultant at Epsilon, in this effort.

21. The updated shadow flicker assessment does not comply with the SEC’s amended rules for the following reasons. There are also errors in the replacement for Section I.6.d of the Application.

- a. Mr. O’Neal’s assessment for shadow flicker removed the properties from his 2015 report as were removed from his predicted noise results. See Table 1 above. No explanation is

⁷ NH Site 301.18(h): Noise emissions shall be free of audible tones, and if the presence of a pure tone frequency is detected, a 5 dB penalty shall be added to the measured dBA sound level.

provided for why these properties were eliminated from the assessment or what changed since October 2015.

- b. Mr. O’Neal cites a definition of “Astronomical Maximum” that is not compliant with the definition in NH Site 102.11. Mr. O’Neal’s definition does not establish that the “rotor-plane of the turbine is always perpendicular to the sun.” (*Attachment 6 at 4-1*)
- c. NH Rule 301.08(a)(2) sets *a minimum impact distance* for shadow flicker at 1 mile, however, Mr. O’Neal’s model assesses shadow flicker up to a 1-mile. His model appears to assume that properties just beyond 1-mile will experience no shadow flicker. This is flatly wrong, and we can demonstrate this by comparing the results of Mr. O’Neal’s October 2015 analysis with an impact distance of 1130 meters (3,707 feet), to his results using a 1-mile impact distance. See Table 2 below. The data in the first four columns were taken from Mr O’Neal’s Attachment 6, Table 5-1. The information in the last column is from Mr. O’Neal’s Appendix 13b submitted on October 2, 2015.⁸ The table shows the hours of shadow flicker at the *same* receptors when the model was run using different impact distances. The results are decidedly different even at receptors that were within the smaller impact area. There is no information in the report indicating a change in the model’s assumptions other than impact distance. It would appear that the results would be different again had the methodology complied with SEC NH Rule 301.08(a)(2).

⁸ The ID numbers in Table 2 represent the locations from the February 2016 report. Since five properties were removed from the October 2015 data, these ID numbers are slightly off in many of the cases, since the IDs were renumbered sequentially after the properties were removed. For example, ID 87 corresponds to ID 90 in the October 2015 report, and ID 146 corresponds to ID 151. The X and Y locations are unique identifiers and did not change for any of the properties.

Table 2

ID	X (Easting)	Y (Northing)	SFlicker to 1-mile (hh:mm)	SFlicker to 1130m (hh:mm)
87	269742.58	61387.33	13:48	0:00
86	269749.54	61392.46	13:42	0:00
4	271565.96	63747.81	13:38	10:10
3	271549.49	63740.04	13:18	9:23
5	271538.09	63766.01	12:55	9:29
6	271527.52	63771.85	12:47	9:19
77	270088.73	62000.89	12:05	0:00
64	273380.77	62733.32	11:42	4:08
65	273391.93	62742.55	11:13	4:01
85	271491.33	63836.9	10:44	8:46
2	271199.03	63480.59	10:28	3:35
114	273438.58	62762.08	9:53	3:32
58	273227.8	63238.36	9:49	7:34
63	273360.41	62895.16	9:41	3:35
66	273417.14	62477.48	9:09	6:44
57	273296.81	63344.24	8:35	3:12
62	273347.28	63110.39	8:33	3:07
59	273319.69	63284.01	8:22	6:21
56	273313.64	63381.73	8:21	0:00
60	273330.44	63262.55	8:17	3:06
67	273192.25	62054.82	8:12	0:00
146	273353.68	63183.49	8:12	3:03
61	273342.62	63248.34	8:11	0:00
34	273302.32	63643.97	8:02	0:00

- d. The replacement text for Section I.6.d states “the structure must be within ten rotor diameters of the wind turbine generator.” NH Rule 301.08(a)(2) sets the impact distance at a minimum of 1-mile.
- e. The replacement text for Section I.6.d states that the “newly adopted rules require that the expected shadow flicker at any non-participating receptor not exceed a total of eight (8)

hours per year.” This is not compliant with the rules. The amended Site rules make no distinction between participating and non-participating properties, thus all properties are subject to the same limit of 8 hours of shadow flicker per year.

CONCLUSION

The rulemaking effort that was initiated in 2014 with the passage of NH Senate Bills 99 and 281 represented a comprehensive, multi-year review by NH OEP and the NH SEC. Public engagement was significant during this period and now the Public has an expectation that the rules adopted by the Committee will be followed, especially by applicants and their experts. Since this Docket represents the first wind energy proposal to be litigated under the new rules, we believe it is essential that they be respected. The new rules are intended to streamline the process and ensure transparency and consistency particularly for some of the more technical aspects of an application. Unfortunately, the type of compliance issues identified in this motion appear to bypass both the letter and the intent of the rules and should not be permitted to stand.

WHEREFORE, in view of the foregoing, the Parties respectfully request that this honorable Committee:

- A. Order AWE to bring those portions of the application cited in this motion into compliance with the rules;
- B. Reconsider the December 1, 2015 order on whether the Application met the completeness test;
- C. Determine whether the preliminary schedule discussed at the pre-hearing conference should be enlarged so the deficiencies in the Application can be addressed;
- D. Grant such further relief as it deems equitable and appropriate.

Dated this day of March 10, 2016

By:

A handwritten signature in black ink, appearing to be 'Lisa Linowes', written in a cursive style.

Lisa Linowes, The Windaction Group

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Lorraine Carey Block, Intervenor

A handwritten signature in black ink, appearing to be 'Richard Block', written in a cursive style.

Richard Block, Intervenor

cc: Parties to Docket 2015-02